

OCT 76



Overseas Development Institute Ltd  
10-11 Percy Street London W1P 0JB  
Telephone: 01-637 3622  
Cables: Picodi, London W1

## IRRIGATION MANAGEMENT IN DEVELOPING COUNTRIES:

### A SUGGESTED ACTION PROGRAMME

The attached propositions arose out of discussions and exchanges of experience at a workshop on Choices in Irrigation Management, organised by the Overseas Development Institute, London\*, and held at Canterbury, U.K., from 27th September to 1st October 1976.

The workshop was attended by 35 participants, of whom 12 came from eight different countries in Asia, Africa and Latin America. The majority of these had had extensive first-hand experience of irrigation management and the rest of the participants had been directly concerned with the appraisal or evaluation of irrigation projects in a wide variety of countries.

The participants were present as individuals, not as representatives of their governments, and there was therefore no attempt to reach formal, officially endorsed conclusions. Nevertheless, the attached propositions were discussed at length by the participants and, the main argument won strong general support.

The organisers of the workshop believed that the World Water Conference would be interested in hearing the views of a group of professional people who could speak authoritatively on the subject of irrigation management. It was therefore decided that these propositions - which appear so important and yet so often unrecognised - should be brought to its attention, in the hope that Governments and peoples will be able to derive from them the very substantial benefits which they promise.

---

\* ODI is an independent, non-government body. It was set up in 1960 and is financed by official grants and private donations from British and international sources.

## IRRIGATION MANAGEMENT IN DEVELOPING COUNTRIES:

### A SUGGESTED ACTION PROGRAMME

(Propositions arising out of discussion at the ODI  
Workshop on Choices in Irrigation Management,  
Canterbury, U.K., 27th September - 1st October 1976)

#### Potential and Performance

The potential for the production of food and other crops on existing irrigation projects in many of the developing countries of the world appears enormous, not least because it has been enhanced by advances of agricultural technology in the past ten years. It is, however, surprising and alarming to find that the performance of the great majority of these projects, especially those relying on gravity flow, fall far short of expectations and potential. It is rare indeed to find economists' cost-benefit calculations justified, planners' expectations fulfilled, or governments' targets achieved. In operation, most projects have water use efficiencies of less than 50 per cent. Most have brought under effective command much less land than was planned. Minor canalisation and farm-level infrastructure are often left incomplete. Cropping intensities on land which is irrigated usually fall far short of projections. Water deliveries to farmers are often unreliable. The supply of water is frequently very inequitable, with those at the top end receiving more than their fair share, and those at the tail end receiving supplies which are small, uncertain and untimely, if indeed they receive any water at all. In consequence of these and other shortcomings, the production of food and other crops resulting from irrigation facilities almost invariably lags far behind the targets set and what is technically feasible.

#### The Pitfalls of New Projects

Despite these experiences, priority is often placed not upon improving existing irrigation but upon the identification, design and construction of large new projects. New projects, visible and prestigious as they are, attract and tempt donor agencies, engineers, civil servants and political leaders alike. Commitment to them frequently becomes irreversible at an early stage. Far too little attention is paid to how they will be managed and operated. It is all too rare for an adverse appraisal to lead to the abandonment of a proposal. Pilot projects, even when rather unpromising, tend to lead on to larger undertakings. New projects attract resources and divert attention from the often higher and more immediate benefits which would flow from improving existing systems in which there has already been substantial investment. New projects are indeed sometimes fully justified in terms of national needs or regional equity, but their temptations should be recognised and they should be undertaken with much more circumspection than in the past.

#### Priority for Improving What Exists

In many countries, the priority for achieving production and equity objectives through irrigation lies not in the more spectacular construction of new projects but in the less dramatic tasks of improving the operation and management of existing irrigation systems. In countries where irrigation is important, the better management of such systems has usually a very considerable potential for increasing domestic food supplies, for saving foreign exchange at present spent on food imports, and for improving the incomes and security of a larger number of farmers to whom better irrigation facilities might be provided,

all this with little or no expenditure of foreign exchange. The top priority is improving what exists.

#### Realising the Potential

In order to realise more of the huge potential of existing irrigation systems, a seven point programme is recommended for improving operation and management. A central objective of this programme is to ensure for irrigation farmers what they so frequently lack, the reliable and adequate supply of water which is essential if resources are to be exploited to the full. The seven recommendations are:

##### 1. Evaluation and Feedback

Evaluations of current performance are required as a first step. Besides the technical aspects of irrigation and agriculture, such evaluations should examine political and organisational factors which impinge on operational decisions, the management of the staff who control and issue the water, and the problems and incentives of the farmers. Evaluations should certainly feed back into future planning. But the main thrust should be towards feasible improvements in present management.

##### 2. Prestige and Resources for Operation and Maintenance.

Design, planning and construction are glamorous tasks which attract attention and rewards. Operation and maintenance are much more difficult tasks, yet without them the benefits of irrigation cannot be realised. A crucial factor here is reform of the management of the staff who manage the irrigation systems. This requires attention to the details of day-to-day operation. It may also require the creation of special cadres, for example of agricultural engineers who can bridge the gap between the disciplines of engineering and agronomy and who can help to coordinate the functions of water supply and agricultural planning

and advice. More generally, special measures are needed to enhance the prestige, morale and performance of staff at all levels, including appropriate terms of service, training programmes and seminars, public rewards and high-level political recognition. A complementary factor is the provision of adequate resources for operation and maintenance, which commonly suffer from lack of funds, staff and equipment. Maintenance votes are often cut in times of financial stringency. Cases occur of bank loans for irrigation projects being repaid while funds are withheld from operation and maintenance. The collection of irrigation dues as revenue for operation and maintenance often falls far short of requirements. But without adequate resources for operation and maintenance, full benefits cannot be gained from the reformed management of staff.

### 3. Political Support for Necessary but Unpopular Measures

Equitable and productive management of irrigation often requires reducing water to some farmers so that more can be available to others. With scarce groundwater, this means limiting extractions, especially by those farmers with powerful pumps. With surface gravity irrigation systems this often requires reducing water issues to those at the head of canals to less than they want so that adequate water can be supplied to those lower down. Both groundwater rationing and equitable water allocations on canals demand discipline within official organisations, and also resistance on the part of staff to bribes, threats and other inducements. They also require an adequate legal backing and the prompt and impartial prosecution of infringements by farmers or groups of farmers. High-level political support, publicly proclaimed, for the unpopular work required of staff is a vital prerequisite for such discipline, resistance and prosecution. Without such support, it is unrealistic in most countries to expect improved water distribution.

4. Agricultural Extension and Training in Water Use

Improved control over the delivery of water to farmers should be supported by a strengthening in the provision of other complementary inputs and above all in the provision of technical training which will enable farmers to make more productive use of the water delivered. In many irrigated areas, the agricultural extension service is grossly inadequate, both in numbers and skills. The training of farmers in water management is especially neglected. In most countries, there is an acute shortage of senior extension staff with specialist knowledge of water-soil-plant relationships and of water application techniques at field level. There is an urgent need for this specialist cadre to be expanded and for the development of training courses in which the principles and techniques of water management are taught in simplified form to the junior extension staff who provide the main point of contact with farmers.

5. Development of Small Irrigation Groups

On large irrigation schemes, communication and feedback between officials and farmers can be greatly assisted by the creation of small irrigation groups. These are likely to be most effective, for the purposes<sup>672</sup> of transmitting technical training and services and of supervising local operation and maintenance, if they are formed round a self-contained facility (a small watercourse unit served by a single outlet; a single well or pump) and are provided with specific, well-defined functions. Some local experimentation is likely to be required before an appropriate size and form of grouping can be established. Attempts to transplant "pre-packaged" institutions from other cultures are unlikely to be successful.

6. Modernisation, Intensification and Expansion

On many projects there is considerable scope for achieving production and equity objectives through physical modernisation, through intensification of cropping and water use, and through expansion of the irrigated area. The marginal investment is usually low in relation to the benefits providing it is linked with improved staff management and operation. Particularly high returns may often be obtainable from the rehabilitation of medium-sized or smaller irrigation systems, most of them of relatively simple design and many initially constructed through local initiative. Frequently, also, development of infrastructure at the watercourse and farm levels is a neglected activity from which substantial benefits can be derived, providing a predictable and appropriate water supply to the farmer is first assured.

7. Political Priority for Irrigation

A vital condition for the effective improvement of operation and management is that it should be accorded priority at a high political level. Irrigation is sometimes a rather minor or low status ministry or department. It may often be necessary for a Head of Government to take a direct personal interest in operation and management if irrigation is to achieve anything like its potential. In many countries the opportunity is enormous, but it can only be realised through a resolute and consistent exercise of political will in support of irrigation management at both national and field levels.

October 1976